

#### ABSTRACT OF THE DISCLOSURE

An MRI apparatus obtains an ASL (Arterial Spin Labeling) image of a region to be imaged in a subject by performing a scan to the region to be imaged independently in a control mode and in a tag mode according to a pulse sequence based on an ASL technique. The pulse sequence includes a velocity-selective pulse, BVS (Band-limited Velocity-Selective)-pulse, that selectively excites magnetization spins in a blood flow passing through the region to be imaged and having a constant velocity range for the spins to undergo transition to transverse magnetization, and then performs excitation to cause the transverse magnetization to flip back to longitudinal magnetization. The velocity-selective pulse is formed in such a manner that the transverse magnetization excited in each of the control mode and the tag mode gives rise to a phase shift in an opposite polarity upon velocity-selective excitation.